

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Joseph Skiba	Group Art Unit:	3765
Serial No.:	10/625,715	Examiner:	Rodney M. Lindsey
Filed:	July 22, 2003		
For:	LIGHTWEIGHT IMPACT RESISTANT HELMET SYSTEM		
Docket No.:	0133-1		

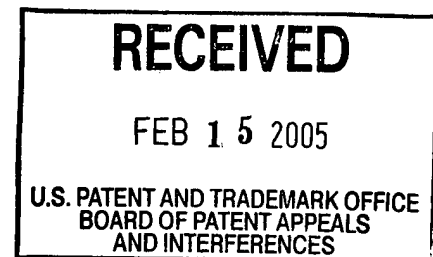
February 10, 2005

BOX BOPAI

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF FOR APPELLANTS

This Reply Brief is submitted pursuant to 37 C.F.R. 41.41 and is in response to the Examiner's Answer dated January 24, 2005 in the pending appeal of the above-identified application. This Reply Brief is transmitted in triplicate. It is submitted that no fee is due in connection with the filing of the instant Reply Brief.



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Claims Appendix

The Examiner has noted a minor error in claim 9 as set forth in the original Appeal Brief. In particular, at line 7, the words --high density polyethylene reinforcing fibers-- following “para-aramid or” were omitted. Appreciation is expressed for the Examiner’s recognition of the obvious typographical error. For the convenience of the Board, a corrected listing of claims is set forth in a Corrected Claims Appendix provided herewith.

Response to Arguments in Examiner's Answer

Applicants respectfully note that Section (9) – Grounds of Rejection set forth in the Examiner's Answer (pages 3 – 5) repeats substantially verbatim portions of the Final Rejection dated July 26, 2004 and the Advisory Action dated October 14, 2004, from which the present appeal is taken. In particular, the Examiner's Answer repeats remarks made in the Advisory Action rejecting claims 1, 5, 6, 8, 9, 11, and 12 under 35 USC 103(a) as being unpatentable over the Japanese patent to Suzuki et al. in view of Schiebl et al. Remarks in the Advisory Action rejecting claims 3 and 7 under 35 USC 103(a) are also repeated.

Applicant/appellant has responded to the grounds delineated hereinabove with respect to claims 1, 5, 6, 8, 9, 11, and 12 and to claims 3 and 7 in the Brief For Appellants. The following additional remarks are filed with reference to the Examiner's Answer and, in particular, to Section (10) – Response to Argument.

Applicant/appellants respectfully traverse the Examiner's assertion at page 5, line 8 of the Examiner's Answer that the glass fiber sheets disclosed by Suzuki et al. [paragraph 0012 of the translation] are "equivalent to a mesh or net" as recited by applicant's claims 1 and 9. Significantly, the Suzuki et al. sheets delineated in paragraph [0012] are said to be "unidirectional fiber sheets in which straight, long inorganic fibers (glass fiber) are aligned and joined in mutually parallel fashion" (paragraph [0012], lines 2-4, emphasis added). Applicant submits that one of ordinary skill in the art would recognize a clear structural distinction between "uniaxial fiber sheets" and the "mesh or net" required by claims 1 and 9 (and claims 3, 5-8, 11, and 12, dependent from base claim 1). The dictionary relevantly defines "mesh" as "a woven, knit, or knotted fabric that has an open texture with evenly spaced small holes." [*Merriam*

Webster's Third International Dictionary-Unabridged at 1416 (1993)]. and "net" as "a meshed arrangement of threads, cords, or ropes that have been twisted, knotted, or woven together at regular intervals." [*Id.* at 1519]. Applicant clearly contemplates mesh in both woven and non-woven form, teaching that "Long reinforcement fibers may be woven into a net or mesh while shorter fibers may be assembled to form a non-woven mesh." at page 16, lines 19-21 of the specification (emphasis added). As would be recognized by one of ordinary skill, such a net or mesh, whether woven or non-woven, would contain fibers oriented in plural directions, instead of the single uniaxial direction of the fibers in the Suzuki et al. sheet, and accordingly would be recognized by the skilled artisan as exhibiting significant strength in other than a single direction, as would the Suzuki et al. sheet. The Examiner, however, has not provided any art reference to substantiate his conclusion that the unidirectional sheets of Suzuki et al. are equivalent to the multidirectional mesh or net recited by claims 1 and 9. Significantly, the sole claim of Suzuki et al. expressly requires unidirectional fiber. It is respectfully submitted that in requiring unidirectional fiber, Suzuki et al. teaches away from use of net or mesh as a surface reinforcement, having selected unidirectional fiber in preference to fibers in other disclosed forms, such as fiber incorporated in a helmet body in random orientation, which is said to be conventional (paragraph [0005]). It is of further significance that Suzuki et al. selects inorganic glass fiber reinforcement, notwithstanding recognition of Kevlar as a fiber conventionally blended into the bulk of a helmet made of FRP (fiber-reinforced plastic) (paragraph [0003]). It is submitted that Suzuki et al.'s selection of glass, and not Kevlar, for surface reinforcement, despite Kevlar's alleged weight benefit, undermines the Examiner's contention that applicant's claimed helmet represents a mere obvious modification that would be obvious because of an

alleged weight reduction (see, e.g., the Advisory Action at page 2, line 16). To the contrary, applicant respectfully maintains that employing the claimed mesh or net comprising para-aramid or high density polyethylene fibers instead of the unidirectional inorganic glass fibers of Suzuki et al. is precisely the type of substantial reconstruction or modification that precludes a determination of obviousness, the fibers being differently oriented and of different material. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (C.C.P.A. 1959).

It is respectfully submitted that applicant/appellant's argument is misrepresented in the Examiner's answer at page 6, lines 1-2. Attention is drawn to the Advisory Action at page 2, lines 13-16, where it is said that "It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Suzuki et al. such that the net or mesh or unidirectional fiber sheet is formed of KEVLAR in the manner of Schiebl et al. to achieve the advantage of lightweight and strength." (Emphasis added). Applicant/appellants submit that such language is reasonably interpreted as an assertion that Schiebl et al. discloses or suggests "net or mesh or unidirectional fiber sheet formed of KEVLAR." Applicant/appellant's remarks at page 14, lines 3-7, are submitted to be clearly apposite to such an assertion, inasmuch as they establish that the "manner of Schiebl et al." in using KEVLAR is clearly distinguishable from the mesh or net recited by applicant/appellant's claims.

However, the Examiner's Answer now purports that the rejection relies on Suzuki et al. "for teaching a bonded mesh or net (equivalent to the glass fiber sheets)" (page 6, lines 3-4), with the "reference to Schiebl et al. merely being relied on for teaching fiber materials usable for forming the sheets/mesh/net" (lines 6-7). As set forth hereinabove, applicant/appellant strongly disagrees that Suzuki et al. teaches a bonded mesh or net and that such structures are equivalent

to the unidirectional glass fiber sheets admittedly disclosed by Suzuki et al. Furthermore, applicant/appellant respectfully disagrees that the aforementioned remarks in the Appeal Brief with respect to Schiebl et al. are drawn singly to Schiebl et al. and not properly addressed to the combination of Schiebl et al. with Suzuki et al. In the end, neither Suzuki et al. nor Schiebl et al., whether individually or in combination, provides the mesh or net required by applicant's claims. The Examiner has provided no motivation to carry out the proposed substantial modification of the references, even if combined that would be necessary to reach applicant's helmet structure.

Applicant/appellant respectfully submits that the argument beginning at page 14, line 19 of the Appeal Brief is mischaracterized by the Examiner's Answer at page 6, second paragraph, as asserting that a person of ordinary skill was precluded from using KEVLAR as an alternative material. To the contrary, the argument is directed to the lack of indication in Schiebl et al. that light weight is related to the presence of long fiber reinforcement and the lack of indication in Suzuki et al. of KEVLAR as being a material suitable for a reinforcing mesh. Both these statements remain uncontroverted. Applicant/appellant has not argued that a person of ordinary skill is precluded from using an alternative material, such as KEVLAR. Rather, applicant/appellant's argument is directed to the absence of motivation in the combination of the Suzuki et al. and Schiebl et al. references to carry out the modification purported by the Examiner to be obvious. The courts have repeatedly held that the motivation for a modification must go far beyond the mere possibility of a modification. ["The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 972 F.2d 1260,

1266, 23 USPQ 2d 1780 (Fed. Cir. 1992), quoting *In re Gordon*, 733 F.2d at 902, 221 USPQ at 1127 (Fed. Cir. 1984)].

In the present instance, the striking failure of either reference to disclose any embodiment using mesh or net comprising KEVLAR, despite recognition in both references that KEVLAR may be otherwise used, is submitted to be strong evidence against the obviousness of the proposed modification. As set forth above, the Examiner's statement that "the only difference between Suzuki et al. and claims 1 and 9 is the use of para-aramid fibers (KEVLAR)" (page 6, lines 19-20) is submitted to be incorrect. The Examiner further states that "The base reference to Suzuki et al. and the secondary reference to Schiebl et al. each evidence the advantage of KEVLAR in constructing a helmet. Thus only knowledge clearly disclosed in the prior art is being relied on in the rejection of the appellant's claims." (Lines 20-23). Such a statement is submitted to fall far short of the mark of establishing a *prima facie* case of obviousness, because applicant/appellant's claims go beyond merely claiming the use of KEVLAR in a helmet, but recite additional structure and a particular use for fibers, such as para-aramid and high density polyethylene.

Applicant/appellants respectfully disagree that paragraph [0020] supports the disposition of mesh or net on both the inner and outer surfaces of a helmet, as alleged at page 7, lines 8-9. While unidirectional glass fiber sheets so disposed are admittedly provided on surfaces of the Suzuki et al. helmet, those sheets are submitted not to be applicant/appellant's mesh or net, for the reasons set forth hereinabove. Even less are these sheets the para-aramid or high density polyethylene mesh or net recited by claim 9, as also argued above.

Applicant/appellants respectfully traverse the Examiner's contention that "appellant's arguments drawn singly to Halstead et al. are not well taken, as the reference to Suzuki et al., not that to Halstead et al., is the basis upon which the rejection is made" (page 7, last line, to page 8, first line). In context, the argument to which the Examiner refers at page 23, third to last line, is submitted not to be drawn singly to Halstead et al., but to establish that Halstead fails to cure the deficiency of Suzuki et al. and Schiebl et al. in not disclosing every feature of claim 1, from which claims 3 and 7 depend and inherit every feature. Even more significantly, the immediately following sentence sets forth applicant/appellant's contention that "any helmet constructed in accordance with the combined teachings of Suzuki et al., Schiebl et al., and Halstead et al. still lacks [certain benefits]..." (page 23, last 2 lines). Having previously regarded Suzuki et al. as failing to "teach either the helmet shell thickness or inner helmet thickness as claimed" (Final Rejection of July 26, 2004, page 3, third to last line), the Examiner now contends that Suzuki et al. establishes a shell thickness within the range delineated by claim 3 (page 8, line 2), in an apparent attempt to resuscitate a doomed argument based on Halstead et al. as providing "adequate starting points" for a thickness range that is allegedly appropriate for a helmet of different construction than that provided by Halstead et al. It is respectfully submitted that the recitation of "adequate starting points" evidences the impermissible adoption of an "obvious to try" standard of obviousness. *Ecolochem, Inc. v. Southern Cal. Edison Co.*, 56 USPQ 2d 1065, 1075 (Fed. Cir. 2000).

CONCLUSION

In light of the foregoing remarks, it is respectfully submitted that the helmet system for a player engaged in contact sports of claim 1 and the improved helmet system of claim 9 are not disclosed or suggested by any combination of the art references applied, and thus meet the conditions for patentability required by 35 USC §103(a). It is further submitted that claims 3, 5-8, 11, and 12, dependent from base claim 1, are patentable within the meaning of 35 USC §103(a) for at least the same reasons as the base claim.

Accordingly, reversal of the rejection of claims 1, 3, 5-9, 11, and 12 under 35 USC §103(a), and allowance of the present application, are earnestly solicited.

Respectfully submitted,

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Claims Appendix — Claims On Appeal (Corrected)

1. (currently amended) A helmet system for a player engaged in contact sports, comprising:
 - a. a helmet shell having inner and outer surfaces reinforced with a bonded net or mesh of long length fibers comprising long-length para-aramid or high density polyethylene reinforcing fibers, said helmet shell being composed of a polymeric material selected from the group consisting of poly-alpha-olefins, homopolymers of ethylene, copolymers of ethylene and other alpha-olefins, polyamides, polycarbonate, polyvinyl chloride, cellulose acetobutyrate, polybutylene terephthalate, polyoxymethylene polymers, polyester, and epoxy;
 - b. a pliable, padded inner helmet attached to said inner surface of said helmet shell, said inner helmet being composed of shock absorbing material; and
 - c. an attachment means disposed within said helmet shell for positioning and holding said second pliable padded inner helmet in contact with the player's head, said helmet shell producing a low curvature bend under impact load, increasing contact area between said inner surface and said inner helmet to thereby increase load absorption and decrease load intensity at the player's head.
2. (cancelled)
3. (original) A helmet system as recited by claim 1, wherein said helmet shell has a thickness ranging from about 1/16 to 1/4 inch.
4. (cancelled)

5. (original) A helmet system as recited by claim 1, wherein said net or mesh has a length greater than 1 inch.
6. (original) A helmet system as recited by claim 1, wherein said inner helmet is composed of energy absorbing polymeric foam.
7. (original) A helmet system as recited by claim 1, wherein said inner helmet has a thickness ranging from about 0.5 to 1 inch.
8. (original) A helmet system as recited by claim 1, wherein said attachment means comprises a strap.
9. (currently amended) In a helmet system having a helmet shell fabricated by injection molding a polymeric material into a molding cavity, the improvement wherein said polymeric material is at least one material selected from the group consisting of poly-alpha-olefins, homopolymers of ethylene, copolymers of ethylene and other alpha-olefins, polyamides, polycarbonate, polyvinyl chloride, cellulose acetobutyrate, polybutylene terephthalate, polyoxymethylene polymers, polyester, and epoxy; and a mesh or net of long length fibers comprising long-length para-aramid or high density polyethylene reinforcing fibers is disposed on both faces of the helmet molding cavity and integrally bonded with said polymeric material during molding to form a composite helmet shell.
10. (cancelled)
11. (previously presented) A helmet system as recited by claim 1, wherein said polymeric material is polycarbonate.

12. (previously presented) A helmet system as recited by claim 1, wherein a full length of said fibers in said mesh or net is aligned in the direction of tension and compression imposed on said surfaces of said helmet during impact.